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(2) Claims 8, 11-13 are rejected for allegedly being unpatentable over the Takahashi patent in view of the Huang et al. patent (US Patent No. 5,671,290).

(3) Claims 14 and 16 are rejected for allegedly being unpatentable over the Takahashi patent in view of the Huang et al. patent and further in view of the Noda et al reference (Pub No. US2002/0030634).

(4) Claim 15 is rejected for allegedly being unpatentable over the Takahashi patent in view of the Huang et al. patent and further in view of Curtright et al. patent (Patent No. 5,844,570).

(5) Claims 9, 17, 19-33 and 40-54 are rejected for allegedly being unpatentable over the Takahashi patent in view of the Prakash et al. patent (US Patent No. 6,778,698).

(6) Claims 34, 36 and 38 are rejected for allegedly being unpatentable over the Takahashi patent in view of the Tessadro patent (U.S. Patent No. 7,003,161).

(7) Claims 35, 37 and 39 are rejected for allegedly being unpatentable over the Takahashi patent in view of the Acharaya et al. patent (U.S. Patent No. 6,094,508).

In view of the following remarks, Applicant respectfully requests reconsideration and withdrawal of the § 103(a) claim rejections.

Claims 1, 3-16 and 34-35 are patentable over the cited references.

Independent claim 1 recites a computer-implemented method of identifying one or more objects within an image, in which the method includes "selecting an edge pixel from a plurality of edge pixels" and "identifying a substantially connected component." The substantially connected component has both "non-edge pixels" as well as "substantially connected edge pixels" that are substantially connected to the selected edge pixel. The number of non-edge pixels in the substantially connected component is based on a level of tolerance for non-edge pixels. Accordingly, in some implementations, the boundary of an object in an image can be identified even if the boundary includes a discontinuity.

The Examiner concedes that the Takahashi patent fails to disclose "identifying a substantially connected component" that includes "non-edge pixels," as recited by claim 1, but relies on the Westman et al. reference for that feature (*see* Office action, pg. 5).

The Westman et al. reference discloses a procedure for image segmentation in which each successive stage of the procedure includes merging adjacent component regions such that a coarse analysis of the image can be obtained (*see* Section 2, paragraph 4). During the first stage, the image is segmented into "basic connected components based on connectivity" of adjacent pixels. The components are determined by a test that compares a threshold with a measure of grey-level or color-space distance between adjacent pixels (*see* Section 2, paragraph 5).

As best understood by the Applicant, the Examiner alleges that segmenting an image into basic components (as disclosed in the Westman et al. reference) corresponds to the claimed "identifying a substantially connected component." Applicant respectfully disagrees. The Westman et al. patent merely discloses that the image is segmented into components "based on connectivity" of adjacent pixels. There is no disclosure or suggestion, however, that the basic components include "non-edge pixels" as recited by pending claim 1. Indeed, given that the Westman et al. patent discloses that the image is segmented into components "based on *connectivity*," one of ordinary skill in the art would conclude, at most, that each basic connected component includes *only* edge pixels.

The Examiner further alleges that the Takahashi patent discloses "selecting an edge pixel from [a] plurality of edge pixels," as recited in pending claim 1 (*see* Office action, pages 4-5). In particular, the Examiner maintains that step 1001 of the flow diagram in FIG. 11 of the Takahashi patent corresponds to selecting an edge pixel "from [a] plurality of edge pixels." Applicant respectfully disagrees and submits that step 1001 of the Takahashi patent does not correspond to selecting an edge pixel "from [a] plurality of edge pixels."

Applicant directs the Examiner to column 16, lines 34-42 of the Takahashi patent, which discloses that FIG. 11 is a flow diagram showing how to derive edge vectors, edge strength and edge direction information for pixels in a color image. As clearly disclosed in the Takahashi patent, the sequence of steps 1001 to 1010 of FIG. 11 are "repetitively executed <u>for *each* of the</u>

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pixels of the color image in succession" (emphasis added). Accordingly, the pixels specified as object pixels, as disclosed in step 1001 of the Takahashi patent, are not selected "from [a] plurality of *edge pixels*," as recited in claim 1. Instead, each pixel is selected from the *entire image*.

Although the Westman et al. reference discloses computing basic connected components, the relied upon portions also are not understood to disclose "selecting an edge pixel from [a] plurality of edge pixels" as recited by pending claim 1.

In addition, none of the other cited references, alone or in combination, are understood to disclose or render obvious the subject matter of pending claim 1.

The Huang et al. patent discloses a face recognition system that includes locating and extracting face regions belonging to known people from a set of model images, and determining the face pose for each of the face regions extracted (*see* Abstract). However, the relied upon portion of the Huang et al. patent is not understood to disclose the features of pending claim 1 that are missing from the Takahashi patent and from the Westman et al. reference.

The Noda et al. reference discloses an image synthesizing apparatus for producing a synthetic image that consists of a background image and at least a main image superimposed on the background image (*see* Abstract). However, the relied upon portion of the Noda et al. reference is not understood to disclose the features missing from the Takahashi patent and the Westman et al. reference.

The Curtright et al. patent discloses a computer-implemented method for generating digital map images of a uniform format that includes: cropping a bit mapped map image corresponding to a desired geographic area; moving the boundaries of the selected map image into a tessellated shape and then re-sizing the map image to contain a predetermined pixel area (*see* Abstract). The relied upon portion of the Curtright et al. patent is not understood to disclose the features missing from the Takahashi patent and the Westman et al. reference.

The Prakash et al. patent discloses a technique to segment an image that includes a multi-scale segmentation process operating on an image and a set of edge chains. Although the Prakash et al. patent discloses the use of an edge chain, the relied upon portion of the Prakash et

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al. patent is not understood to disclose the features missing from the Takahashi patent and the Westman et al. reference.

The Tessadro patent discloses a method to detect and locate an edge based on characteristics of the image, such as texture, intensity and color. However, the relied upon portion of the Tessadro patent is not understood to disclose the features missing from the Takahashi patent and the Westman et al. reference.

The Acharya et al. patent discloses a method for determining a threshold for edge detection based on local intensity information. However, the relied upon portion of the Acharya et al. patent is not understood to disclose the features missing from the Takahashi patent and the Westman et al. reference.

At least for the foregoing reasons, claim 1 should be allowed.

Claims 3-16 and 34-35 depend from claim 1 and should be allowed for at least the same reasons as claim 1.

Claims 17, 19-33 and 36-39 are patentable over the cited references

Claim 17 recites a computer program product, tangibly stored on a computer-readable medium, for identifying one or more objects within an image, that includes instructions for "selecting an edge pixel from a plurality of edge pixels" and identifying a "substantially connected component that includes non-edge pixels."

None of the cited references, alone or in combination, discloses or renders obvious the subject matter of independent claim 17. As set forth in reference to claim 1, the cited references are not understood to disclose or suggest "selecting an edge pixel from a plurality of edge pixels" or a "substantially connected component that includes non-edge pixels."

Accordingly, claim 17 should be allowed. Claims 19-32 and 36-37 depend from claim 17 and should be allowed for at least the same reasons as claim 17.

Claim 33 recites a computer program product, tangibly stored on a computer-readable medium, for identifying multiple objects within a scanned image, that includes instructions for "selecting an edge pixel from a plurality of edge pixels" and identifying a "substantially

connected component" in which the substantially connected component includes "non-edge pixels."

None of the cited references, alone or in combination, are understood to disclose or render obvious the subject matter of independent claim 33. There is no disclosure or suggestion in the cited references of "selecting an edge pixel from a plurality of edge pixels" or a "substantially connected component" that includes "non-edge pixels."

At least for the foregoing reason, claim 33 should be allowed.

Claims 38-39 depend from claim 33 and should be allowed for at least the same reason as claim 33.

Independent claim 40 recites, in part, a system having a processor operable to perform operations including "selecting an edge pixel from a plurality of edge pixels" and "identifying a substantially connected component" that has "non-edge pixels."

None of the cited references, alone or in combination, are understood to disclose or render obvious the subject matter of independent claim 40. There is no disclosure or suggestion in the cited references of a processor "selecting an edge pixel from a plurality of edge pixels" or "identifying a substantially connected component" that has "non-edge pixels."

At least for the foregoing reason, claim 40 should be allowed.

Claims 41-54 depend from claim 40 and should be allowed for at least the same reason as claim 40.
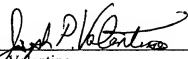
Conclusion

By responding in the foregoing remarks only to particular positions taken by the examiner, the Applicant does not acquiesce with other positions that have not been explicitly addressed. In addition, the Applicant's arguments for the patentability of a claim should not be understood as implying that no other reasons for the patentability of that claim exist.

The Applicant respectfully requests that all pending claims be allowed. Please apply any charges or credits to deposit account 06 1050.

Respectfully submitted,

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